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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,746	12/03/2003	Heng Liu	M-15626-ID US	8880
33605	7590	02/17/2010	EXAMINER	
Haynes and Boone, LLP			KACKAR, RAM N	
IP Section			ART UNIT	
2323 Victory Avenue			PAPER NUMBER	
SUITE 700			1792	
Dallas, TX 75219			MAIL DATE	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/727,746

Applicant(s)

LIU, HENG

Examiner

Ram N. Kackar

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16, 131 and 132 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16, 131 and 132 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 16 and 131-132 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In this instance in the new amendment “wherein the chambers are supplied with reactant gas via gas inlets that are substantially flush with tops of the chambers and the reactant gas flows through narrow gas channels of the chambers such that laminar flow of the reactant gas is substantially maintained within the chambers” the underlined part is indefinite for the following reasons:

It is noted that the Applicant points to drawing 5 for its support. The text part of the specification is however totally silent about this feature.

Therefore, this can not be assumed to be the intention of the specification.

Further, reliance only on drawing of Fig 5 is improper, since the drawing is a mere schematic and is neither according to scale nor show any details which must be shown to support this limitation.

Further, what is an inlet? Is it the whole tube, upper part or the lower part of the tube?

It is noted that neither part is flush with the top part of the chamber. Fig 10 does not show the inlet with respect to top.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 16 and 131-132 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hyung-Jin Kwon (US 20030213436) in view of Tabata et al (US 2003/0133854) or Hirooka et al (US 4798166) as evidenced by Yamada et al (US 20040089235).**

Hyung-Jin Kwon discloses a method for chemical vapor deposition comprising supplying a chamber with reactant gases from a gas supply with reactant gas via gas inlet that is substantially flush with ceiling of the chamber and the reactant gas flows through narrow gas channels of the chambers such that smooth flow of the reactant gas is substantially maintained within the chamber (See Fig 3).

Hyung-Jin Kwon does not disclose plurality of chambers.

Tabata et al disclose a plurality of small chambers for chemical vapor deposition (Fig 2 501, 502 and 503) connected to common gas supply of nitrogen through flow controllers 611-613 and ozone through flow controllers 401-403 and a common exhaust 71.

Similarly Hirooka et al disclose a plurality of small chambers for chemical vapor deposition (Fig 1 A, B and C) connected to common gas supply through mass flow controllers 101b-108b and an exhaust device (See for example Col 6 lines 1-15 and Col 7 lines 38-48).

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to have plurality of chambers having common processing gas input and common exhaust to each for higher throughput.

Regarding the laminar flow, Yamada et al teach its dependence upon the spacing between the substrate holder and the ceiling of the chamber (See for example Para. 76, Fig 7a and 7b and laminar flow in Fig 5).

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to optimize the height of the stage in Hyung-Jin Kwon in order to have a smooth and laminar flow over the substrate for uniform processing.

5. Claims 16 and 131-132 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Yamada et al (US 20040089235) and Tabata et al (US 2003/0133854) or Hirooka et al (US 4798166).

AAPA (Applicants admitted prior art discloses a method for chemical vapor deposition comprising supplying a chamber with reactant gases from a gas supply with reactant gas via gas inlets that is substantially flush with ceiling of the chamber.

AAPA does not disclose that the reactant gas flows through narrow gas channels of the chambers such that smooth flow of the reactant gas is substantially maintained within the chamber.

Yamada et al teach that the smooth laminar flow could be achieved by adjusting the spacing between the substrate holder and the ceiling of the chamber (See for example Para. 76, Fig 7a and 7b and laminar flow in Fig 5).

AAPA in view of Yamada et al do not disclose common gas supply and exhaust for plurality of process chambers.

As discussed above according to the teachings of Tabata et al or Hirooka et al it would have been obvious for one of ordinary skill in the art at the time of invention to have plurality of chambers having common processing gas input and common exhaust to each for higher throughput.

6. Claims 16 and 131-132 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xia et al (US 6348099) in view of Tabata et al (US 2003/0133854) or Hirooka et al (US 4798166) as evidenced by Yamada et al (US 20040089235).

Xia et al discloses a method for chemical vapor deposition comprising supplying a chamber with reactant gases from a gas supply with reactant gas via gas inlet that is substantially flush with ceiling of the chamber and the reactant gas flows through narrow gas channels of the chambers such that smooth flow of the reactant gas is substantially maintained within the chamber (See Fig 1A).

Xia et al do not disclose plurality of chambers.

As discussed above it would have been obvious according to the teachings of Tabata et al or Hirooka et al as evidenced by Yamada et al to have plurality of chamber with common gas supply and exhaust and optimize gas flow above the substrate.

Response to Arguments

Applicant's arguments filed 1/15/2010 have been fully considered but they are not moot in view of the present grounds of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Ram N Kackar/
Primary Examiner, Art Unit 1792